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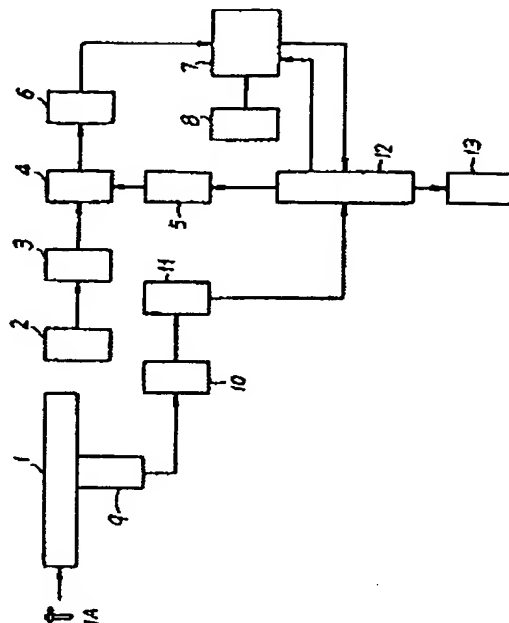
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TITLE : AUTOMATIC YOUNG'S MODULUS
MEASURING APPARATUS



ABSTRACT : PURPOSE: To make it possible to measure Young's modulus automatically at high accuracy without malfunction even at noisy places by automatically setting the cut-off frequency of a filter even if the natural frequency is changed by the changes in kinds and sizes of specimens.

CONSTITUTION: At first, the kind and the size of a specimen 1 are inputted into a computer 12. Then the cut-off frequency of a low-pass filter 4 is automatically set in accordance of a program incorporated in the computer 12. When one end of the specimen 1 is hit with a wooden mallet and the like, the trigger circuit in a counter 7 is operated. A testing machine sequentially measures the period and the weight of the natural oscillation and the weight of a material. The computer 12 computes Young's modulus, sound speed and density based on the data. The results are outputted to a printer. Namely, when one end of the specimen 1 is hit, the natural oscillation of the specimen 1 is excited. The basic oscillating period of the longitudinal resonance of the material is measured by using the sound or mechanical oscillation generated at this time. At the same time, the weight of the specimen is measured. The Young's modulus is computed in the computer 12 based on the two physical quantities and the size of the specimen 1 using the oscillation theory of the longitudinal resonance in one dimension.

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